SERVICE MANUAL

900RE SERIES HEAVY DUTY GAS GRIDDLES



MODELS

924RE	ML-135221-00G24
936RE	ML-135222-00G36
948RE	ML-135223-00G48
960RE	ML-135224-00G60
972RE	ML-135225-00G72

- NOTICE -

This manual is prepared for the use of trained Vulcan Service Technicians and should not be used by those not properly qualified. If you have attended a Vulcan Service School for this product, you may be qualified to perform all the procedures described in this manual.

This manual is not intended to be all encompassing. If you have not attended a Vulcan Service School for this product, you should read, in it's entirety, the repair procedure you wish to perform to determine if you have the necessary tools, instruments and skills required to perform the procedure. Procedures for which you do not have the necessary tools, instruments and skills should be performed by a trained Vulcan Service Technician.

For additional information on Vulcan-Hart or to locate an authorized parts and service provider in your area, visit our website at www.vulcanhart.com

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F35628 (10-04)

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GENERAL

INTRODUCTION

Procedures in this manual will apply to all models unless specified. Pictures and illustrations can be of any model unless the picture or illustration needs to be model specific. All models are equipped with 30,000 BTU/HR burners as standard equipment. One burner is used for every 12 inches of griddle surface.

All models use an automatic spark igniter to light the burners.

INSTALLATION

Generally, installations are made by the dealer or contracted by the dealer or owner. Detailed installation instructions are included in the Installation & Operation Manual which is sent with each unit.

OPERATION

Detailed operation instruction are included in the Installation and Operation Manual which is sent with each unit.

CLEANING

Detailed cleaning procedures are included in the Installation and Operation Manual which is sent with each unit.

LUBRICATION

No lubrication is required on this equipment.

SPECIFICATIONS

Electrical Data

Model	Volts	Hertz	Phase	Amps
924RE	120	60	1	0.5
936RE	120	60	1	0.5
948RE	120	60	1	0.5
960RE	120	60	1	0.5
972RE	120	60	1	0.5

Gas Data

Model	Input BTU/HR		Manifold Pressure	
	Natural	LP Gas	Natural	LP Gas
924RE	60,000	60,000	5.0” W.C. (1.1 kPa)	10” W.C. (2.2 kPa)
936RE	90,000	90,000		
948RE	120,000	120,000		
960RE	150,000	150,000		
972RE	180,000	180,000		

TOOLS

Standard

- Hand tools (standard set)
- VOM with AC current tester (any quality VOM with a sensitivity of at least 20,000 ohms per volt can be used)
- Temperature tester (thermocouple type)
- Manometer

REMOVAL AND REPLACEMENT OF PARTS

COMPONENT LOCATION

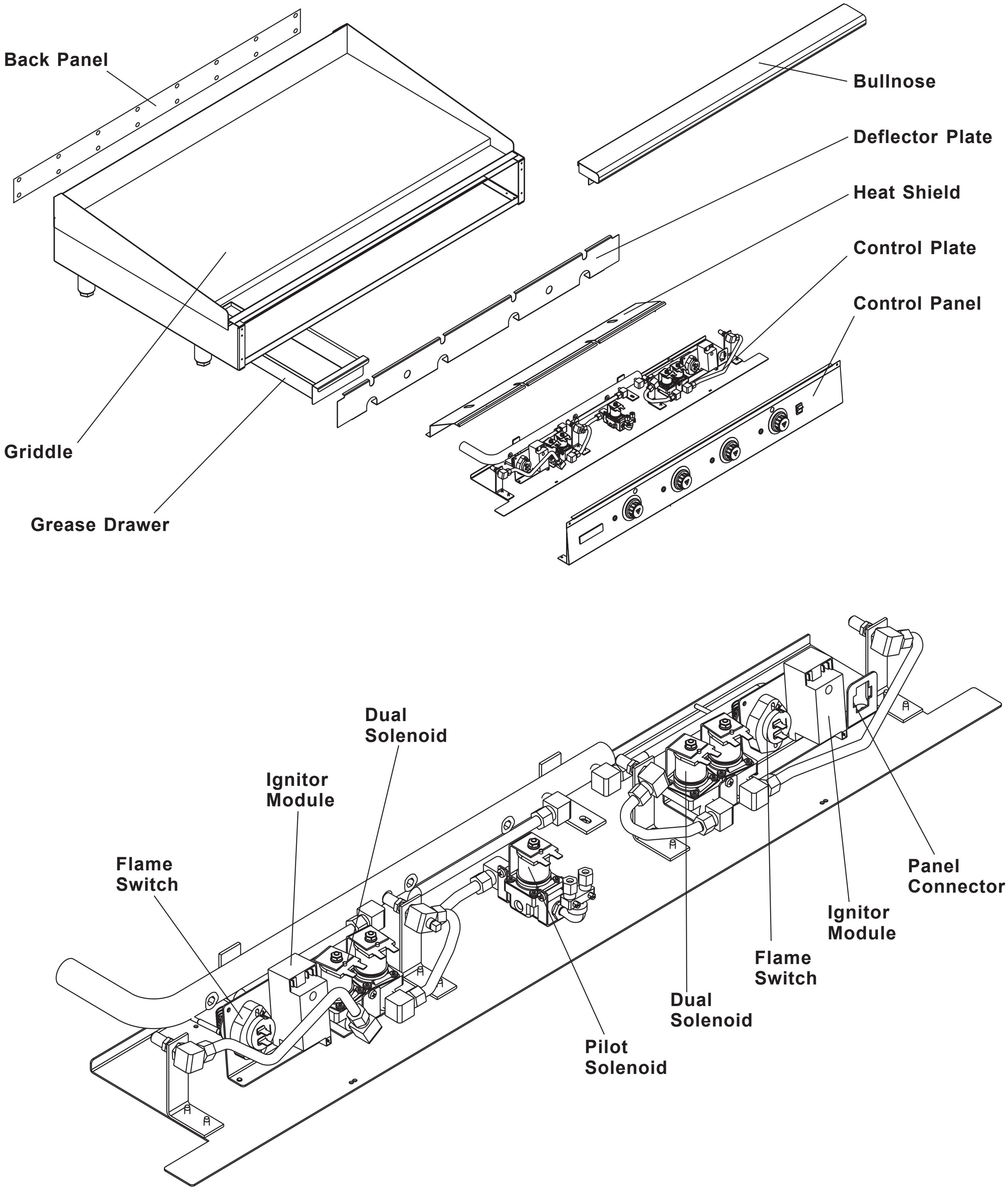


Figure A

CONTROL PANEL

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES.



1. Remove the two screws securing the control panel. One screw is located at each end of the control panel.
2. Pull the control panel forward and disconnect the electrical connector near the right end.

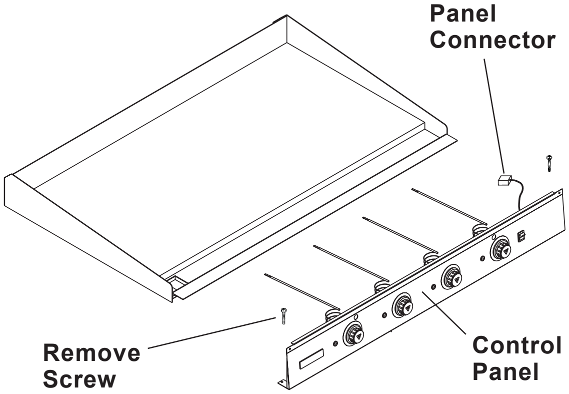


Figure B

3. Reverse the procedure to install.

COVERS AND PANELS

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES.



Bullnose Weld Assembly

1. Remove control panel.
2. The bullnose weld assembly is secured with two screws, one on each side of the bottom of the assembly. Remove these screws, then remove the bullnose weld assembly from the griddle.

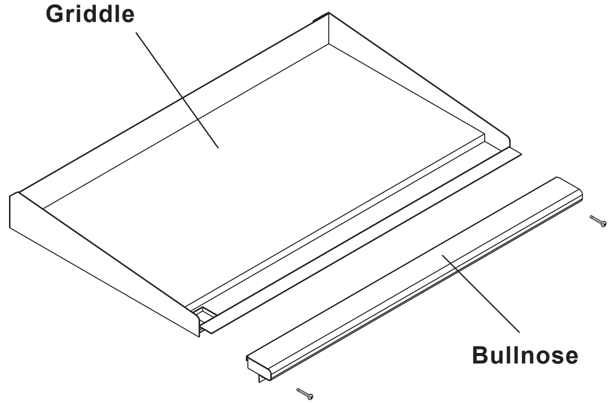


Figure C

3. Reverse the procedure to install.

Heat Shield

1. Remove control panel.
2. The heat shield clamps on the front of the griddle and can be removed by grasping the top of the shield and pulling forward.

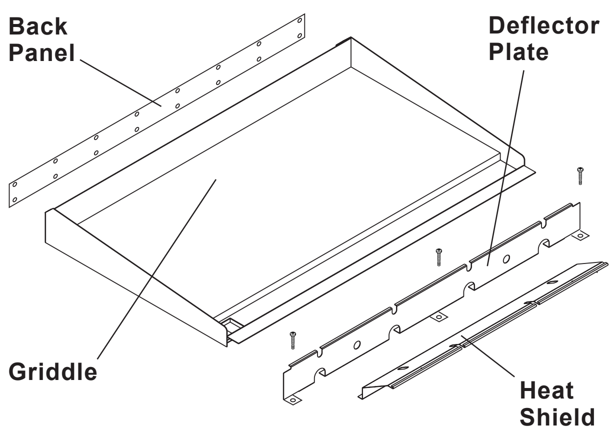


Figure D

3. Reverse the procedure to install.

Back Panel

1. Remove all screws from rear of griddle securing the back panel.
2. Remove the back panel. (See Figure D)
3. Reverse procedures to install.

POWER ON/OFF SWITCH

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES.

1. Remove the control panel.
2. Label and disconnect the wires to the power ON/OFF switch.
3. Squeeze the switch retainer and slide the switch out through the front of the control panel.

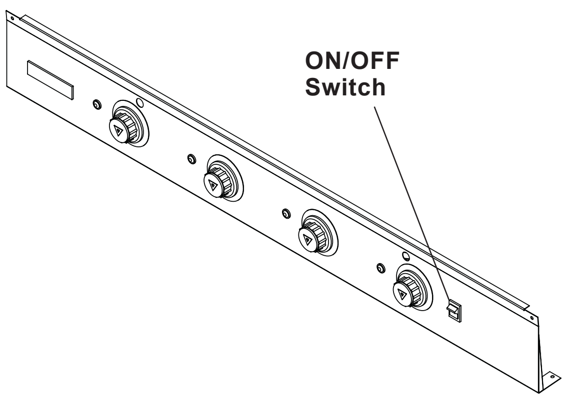


Figure E

4. Reverse procedures to install and check for proper operation.

INDICATOR LIGHT

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES.

1. Remove the control panel.
2. Label and disconnect the wires to the Red indicator light.
3. Squeeze the light retainers and slide the indicator light out through the front of the control panel.
4. Reverse procedures to install and check for proper operation.

THERMOSTAT

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES.

1. Remove the control panel.
2. Remove the knob.
3. Remove the two screws and two washers securing the thermostat and thermostat dial to the control panel, then remove the thermostat and thermostat dial.
4. When installing a new thermostat reverse the procedure and be sure to position the thermostat dial with OFF at the top.
5. Check calibration. Refer to the Service Procedures and Adjustments section of this manual.

FLAME SWITCH



WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES.

1. Remove the control panel.
2. Label and disconnect the wires to the flame switch.
3. Remove the two screws securing flame switch to control plate.
4. Remove sensor from the pilot assembly. Sensor can be accessed from the front of unit or from underneath the unit via the pilot assembly access cut out opening. The sensor is a snap in fit device.
5. When installing a new flame switch, reverse the procedure. Be sure to carefully route and attach the sensor to the pilot assembly and check for proper operation.

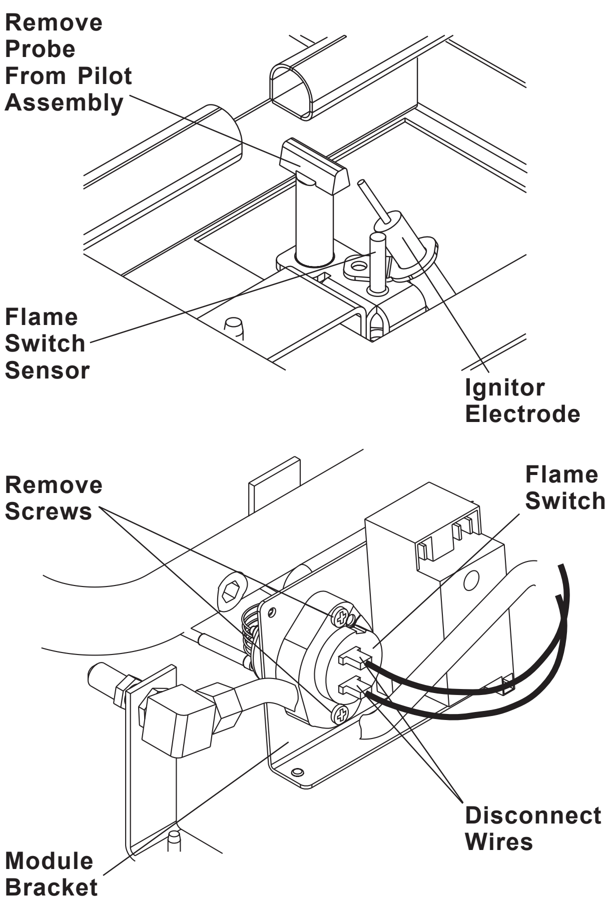


Figure F

IGNITOR MODULE



WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES.

1. Remove the control panel.
2. Label and disconnect the black, green, and white wires from the ignitor module.
3. Disconnect the ignitor cable from the bottom of the ignitor module.
4. Remove the two screws securing ignitor module to module bracket.
5. Remove ignitor module from module bracket.
6. When installing a new ignitor module reverse the procedure and check for proper operation.

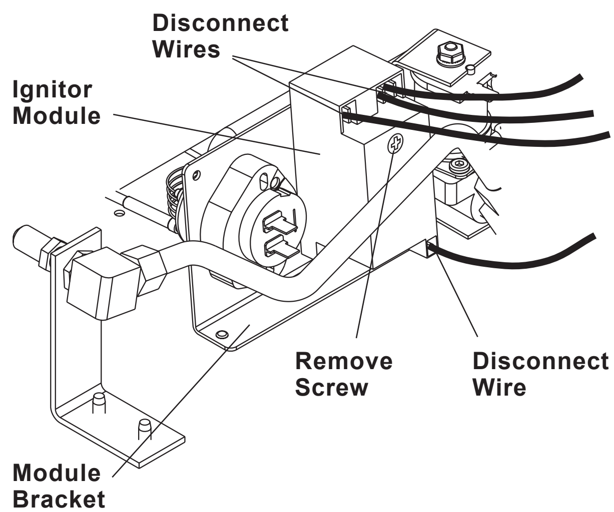


Figure G

GAS BURNER

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES.



1. Remove the back panel.
2. Cut shipping tie from burner.
3. To remove the burner, reach through the back of the unit and lift the burner up over the guide screw then pull the burner out through the back of the unit.
4. Replace the burner by inserting the burner through the rear of the unit, engaging the burner venturi onto the burner valve orifice at the front of unit. From the front of the unit, remove the control panel to check that the venturi is properly fitted over the orifice.
5. Reassemble the control and back panels then check for proper operation.

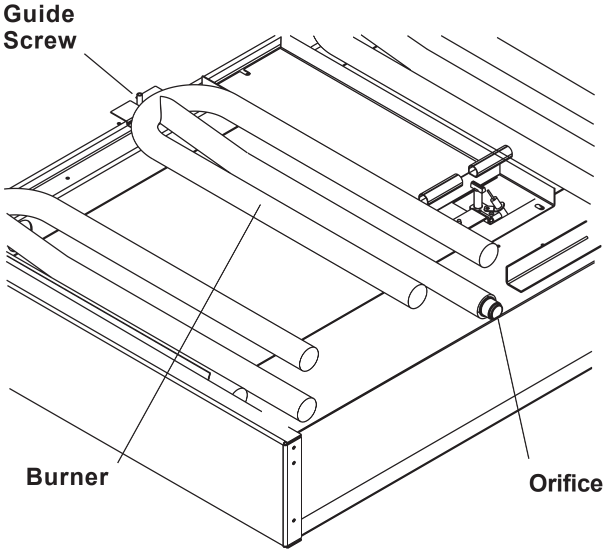


Figure H

PILOT SOLENOID

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES.



WARNING: SHUT OFF THE GAS BEFORE SERVICING THE GRIDDLE.

1. Remove the control panel.
2. Label and disconnect the two wires connected to the solenoid.
3. Disconnect the input compression fitting and the two output compression fittings.
4. Remove the two screws attaching solenoid to single solenoid bracket and remove solenoid.

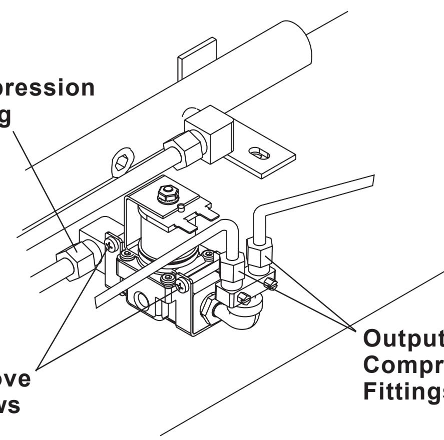


Figure I

5. Reverse procedure to install the replacement gas solenoid.

WARNING: ALL GAS JOINTS DISTURBED DURING SERVICING MUST BE CHECKED FOR LEAKS. CHECK WITH SOAP AND WATER SOLUTION (BUBBLES). DO NOT USE AN OPEN FLAME.

6. Verify gas pressure as outlined under the GAS PRESSURE ADJUSTMENT in Service Procedures and Adjustments. Check for proper operation.

PILOT

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES.



WARNING: SHUT OFF THE GAS BEFORE SERVICING THE GRIDDLE.

1. Remove control panel and heat shield for visual access of the pilot.
2. Reaching underneath the front of the griddle remove the pilot tube fitting and disengage the pilot tube from the pilot.
3. Reaching up through the square pilot access cut out, remove the screw retaining the pilot bracket to the unit and slip the entire pilot assembly out from under the front section of the unit.
4. Remove the pilot from the bracket.
5. Reverse procedures to install new pilot.

WARNING: ALL GAS JOINTS DISTURBED DURING SERVICING MUST BE CHECKED FOR LEAKS. CHECK WITH SOAP AND WATER SOLUTION (BUBBLES). DO NOT USE AN OPEN FLAME.

6. Verify gas pressure as outlined under the GAS PRESSURE ADJUSTMENT in the Service Procedures and Adjustments section of this manual. Check for proper operation.

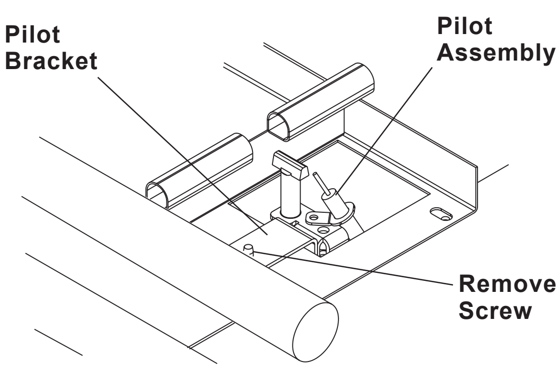


Figure J

DUAL SOLENOID

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES.



WARNING: SHUT OFF THE GAS BEFORE SERVICING THE GRIDDLE.

1. Remove the control panel.
2. Label and disconnect the two wires connected to each solenoid.
3. Disconnect the input compression fitting and the two output compression fittings.
4. Remove the screw securing solenoids to solenoid bracket and remove solenoid.

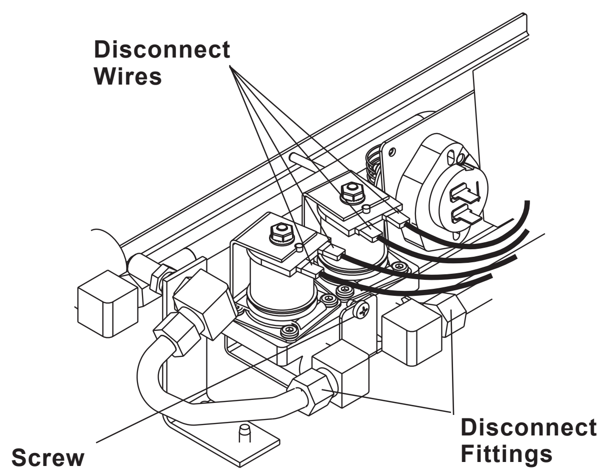


Figure K

5. Reverse procedure to install the replacement dual solenoid.

WARNING: ALL GAS JOINTS DISTURBED DURING SERVICING MUST BE CHECKED FOR LEAKS. CHECK WITH SOAP AND WATER SOLUTION (BUBBLES). DO NOT USE AN OPEN FLAME.

6. Verify gas pressure as outlined under the GAS PRESSURE ADJUSTMENT in Service Procedures and Adjustments. Check for proper operation.

SERVICE PROCEDURES AND ADJUSTMENTS

WARNING: CERTAIN PROCEDURES IN THIS SECTION REQUIRE ELECTRICAL TEST OR MEASUREMENTS WHILE POWER IS APPLIED TO THE MACHINE. EXERCISE EXTREME CAUTION AT ALL TIMES. IF TEST POINTS ARE NOT EASILY ACCESSIBLE, DISCONNECT POWER AND FOLLOW LOCKOUT / TAGOUT PROCEDURES, ATTACH TEST EQUIPMENT AND REAPPLY POWER TO TEST.

THERMOSTAT CALIBRATION

1. Set the thermocouple in the center of the burner section to be calibrated.
2. Set the ON/OFF switch to the ON position. Adjust the thermostat knob of the burner to be calibrated to 350 degrees.
3. Allow the burners to cycle on and off at least twice. Observe the griddle heat light and thermocouple readings. The thermocouple reading should be 350 degrees plus or minus 15 degrees the instant the heating light comes on.

   If the unit is not within these calibration specifications follow the steps below.
4. Gently, remove the thermostat knob from the unit without rotating the thermostat shaft.
5. Loosen (2) screws securing the temperature dial plate to the unit. Gently, replace the thermostat knob onto the unit without moving the thermostat shaft.
6. Hold the thermostat knob in place and rotate the dial plate so that the 350 degree position aligns with the knob temperature indicator mark.
7. While holding the dial plate in position, gently remove the knob without moving the shaft . Tighten down the (2) dial plate securing screws.
8. Replace the thermostat knob and verify that thermocouple reading, knob indicator and dial setting all agree.
9. Turn the knob and ON/OFF switch to the OFF position.
10. Remove the thermocouple.

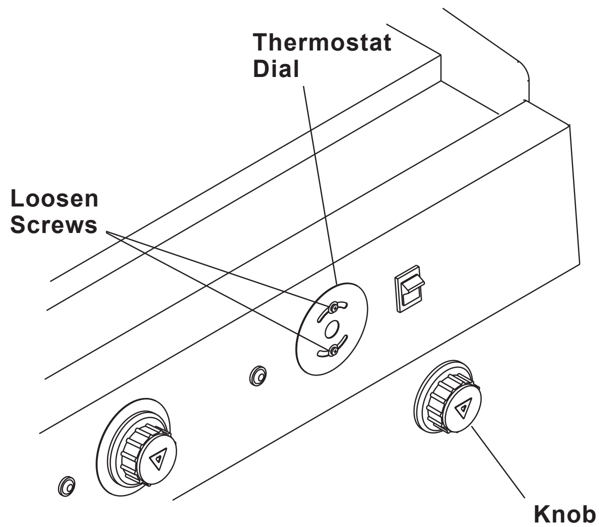


Figure L

MAIN BURNER ADJUSTMENT

For efficient burner operation, it is important that a proper balance of gas volume and primary air supply is maintained, to give complete combustion. Insufficient air supply results in a yellow streaming flame. Primary air supply is controlled by the air shutter on the front of the burner venturi. Loosen the screws on the venturi and adjust the air shutter to just eliminate yellow tips on burner flames. Lock the air shutter in place by tightening the screws. Repeat this procedure with all burners.

1. All units are equipped with fixed orifices for use with natural or propane gas and no adjustment is necessary.

2. Units for operation of natural or propane gas are also equipped with a factory preset pressure regulator with an outlet pressure of 5" W.C. (Water Column) for natural gas supply and 10" W.C. for propane gas supply, and should not require further adjustment.
3. The burners and pilot flames may be observed through round holes in the front panel.

GAS PRESSURE MEASUREMENT

1. Set the power ON/OFF switch to the OFF position.
2. Turn the gas supply off at manual shutoff valve.
3. Remove the screws securing the control panel and move the panel forward sufficiently to access the plug on the manifold pressure port.
4. Remove the plug from the manifold pressure port.
5. Install hose barb adapter and attach manometer tube.

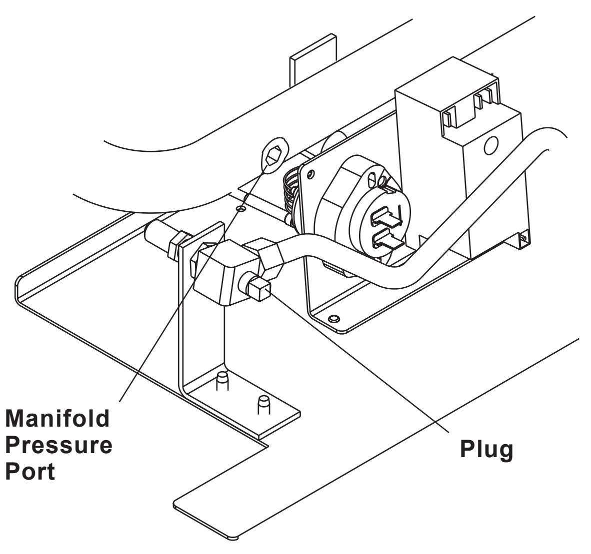


Figure M

WARNING: THE FOLLOWING STEPS REQUIRE POWER TO BE APPLIED TO THE UNIT DURING TEST. USE EXTREME CAUTION AT ALL TIMES.

6. Turn the power switch to the ON position.
7. Turn only one burner on to the maximum temperature.
8. Check gas pressure.
9. Turn all burners on to the maximum temperature.
10. Check gas pressure.
11. Turn all other equipment on same supply line on.
12. Check gas presssure.

NOTE: Pressure drop should not be greater than ±½" W.C. If gas pressure requires adjustment, the adjustment screw is located under a cap on the regulator.

PRESSURE READINGS (IN W.C.)

	Gas Type	
	Natural	Propane
Manifold	5	10
Recommended	7-9 (Line)	11-12 (Line)
Minimum	6 (Line)	11 (Line)
Maximum	14 (Line)	14 (Line)

13. Turn off all burners.
14. Turn ON/OFF switch to OFF position.
15. Disconnect manometer and reinstall plug.

ELECTRICAL OPERATION

COMPONENT DESCRIPTION

Power Switch ON/OFF – Switch turns power ON or OFF.

Ignition Control Module – Provides ignition spark. Turned on when ON/OFF switch is set to the ON position and turned off when flame switch closes.

Burner On Lights – Illuminates to indicate burner is turned on.

Thermostats – Turns burner on and sets operating temperature.

Flame Switch – When the flame switch is heated by the pilot the switch contacts close and turn on the single and/or dual burner solenoids.

Gas Valve (Single Solenoid) – Contains one valve. The valve controls a single burner. The solenoid is turned on when the ON/OFF switch is in the ON position and the corresponding thermostat is rotated out of the OFF position. When the solenoid is turned on (operated) gas flows to the burners.

Gas Valve (Dual Solenoid) – Contains two valves. Each valve controls a separate burner. Solenoids are turned on when the ON/OFF switch is in the ON position and the corresponding thermostat is rotated out of the OFF position.

Pilot Gas Valve (Single Solenoid) – Contains one valve. The valve controls the gas to the pilot. The solenoid is turned on when the ON/OFF switch is in the ON position and turned off when the flame switch closes.

SEQUENCE OF OPERATION

Operation of all size griddles is the same. The following discussion is for the 48” griddle. This griddle has four thermostats, two flame switches, two dual solenoids and one pilot solenoid.

The neutral wire from the power source is directly connected to the following terminals:

- A terminal on each thermostat
- The N terminal on each ignition module
- One terminal on the pilot solenoid

When the power ON/OFF switch is set to the ON position, voltage is applied to the following terminals:

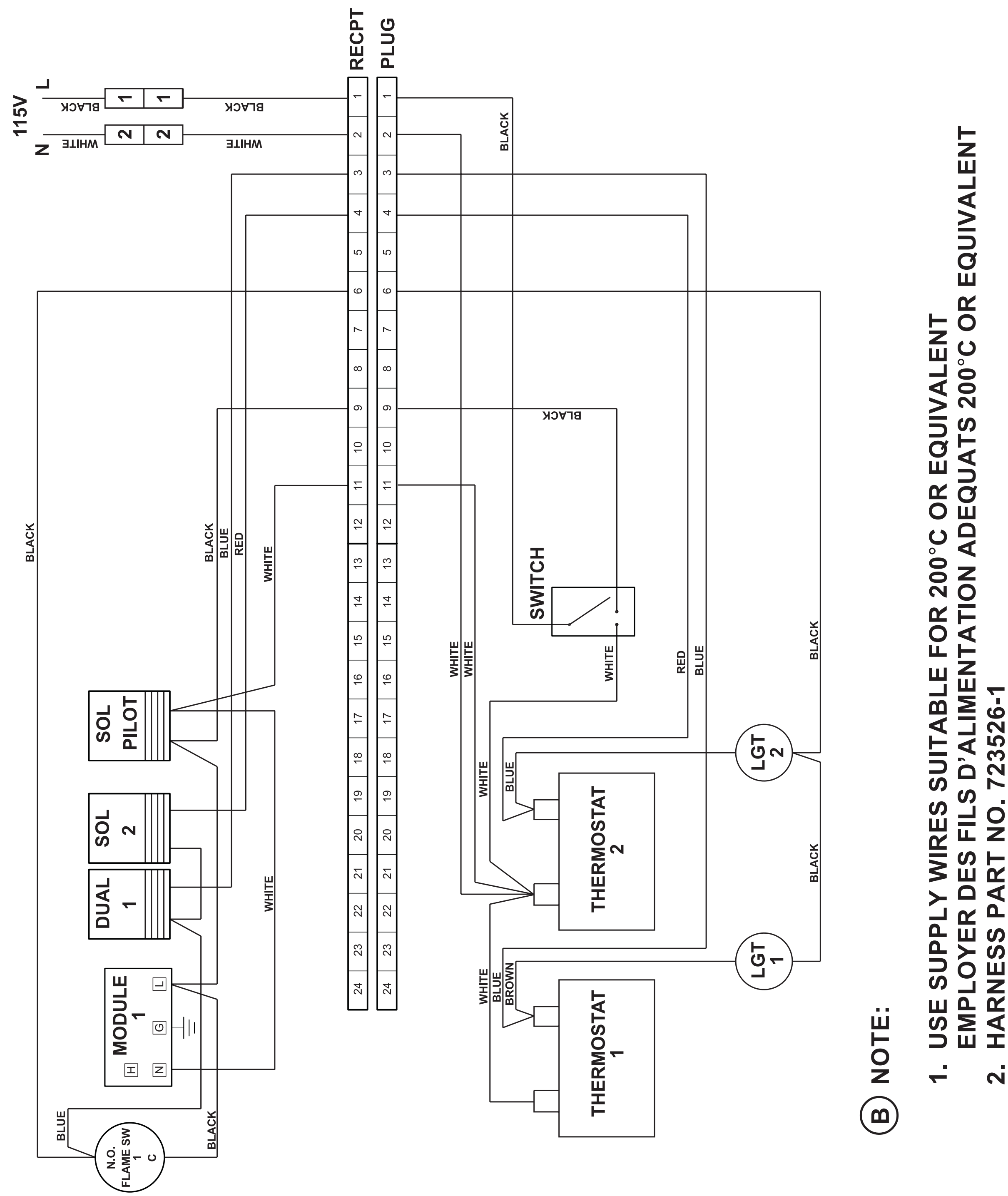
- Terminal L1 on each ignition module turning the module on
- One side of each flame switch
- The remaining terminal on the pilot solenoid energizing the solenoid

The ignition module which is now connected across the power lines turns on and provides the voltage for the ignition spark. The pilot valve solenoid is energized allowing gas to flow to the pilot where it is ignited by the spark. The pilot flame heats up the flame switch. When the flame switch is sufficiently hot, the switch closes. The voltage through the flame switch is applied to one side of each burner solenoid and one side of the burner ON light.

When the pilot flame is sensed, the ignition module will shut off automatically.

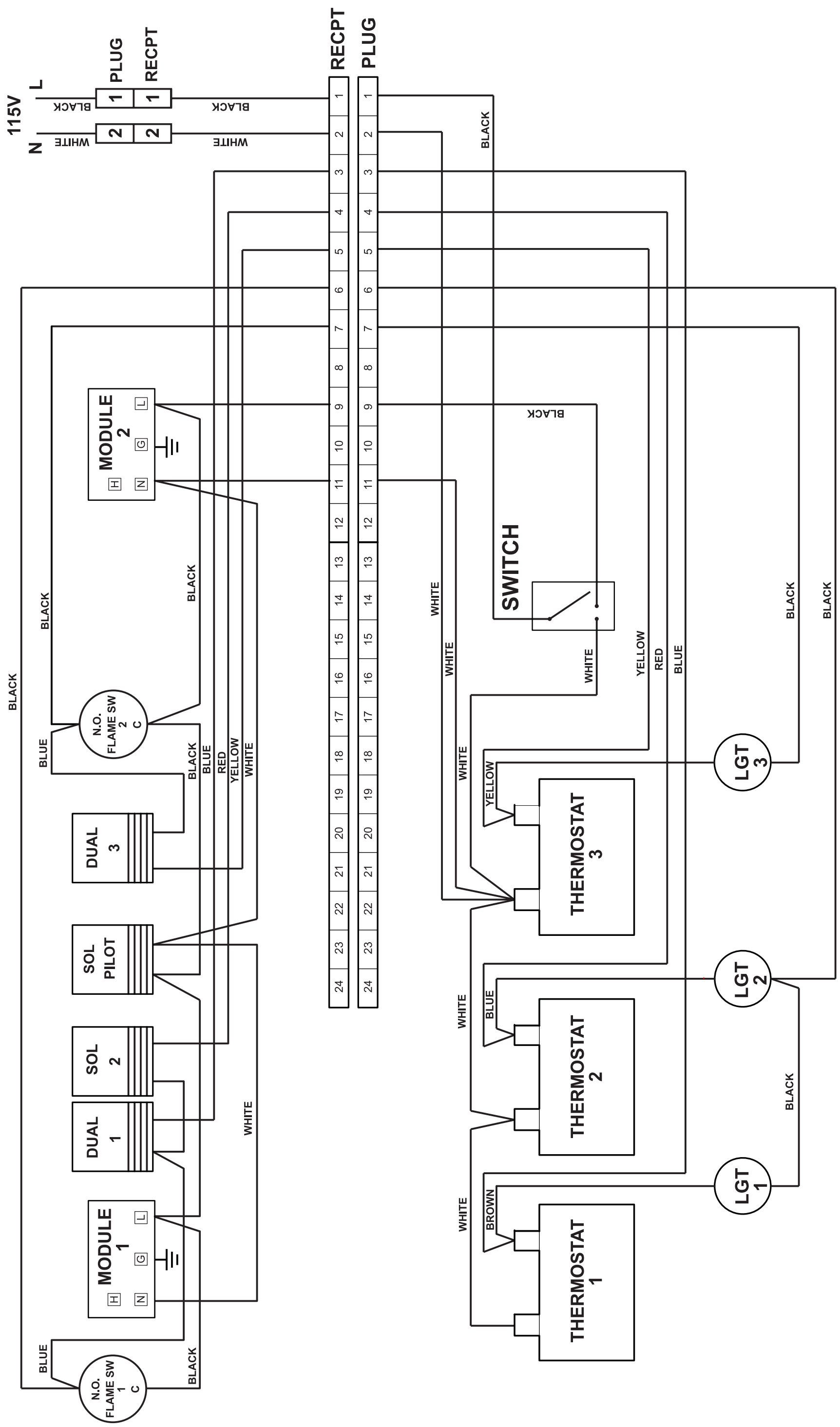
When a thermostat is rotated out of the OFF position the neutral return wire is connected to the other side of the burner light causing the light to be illuminated. At the same time the neutral is connected to the other side of the burner solenoid causing the solenoid to operate and allowing gas to flow to the burner.

SCHEMATIC DIAGRAMS



Schematic Drawing for 24" Griddle

SCHEMATIC DIAGRAMS

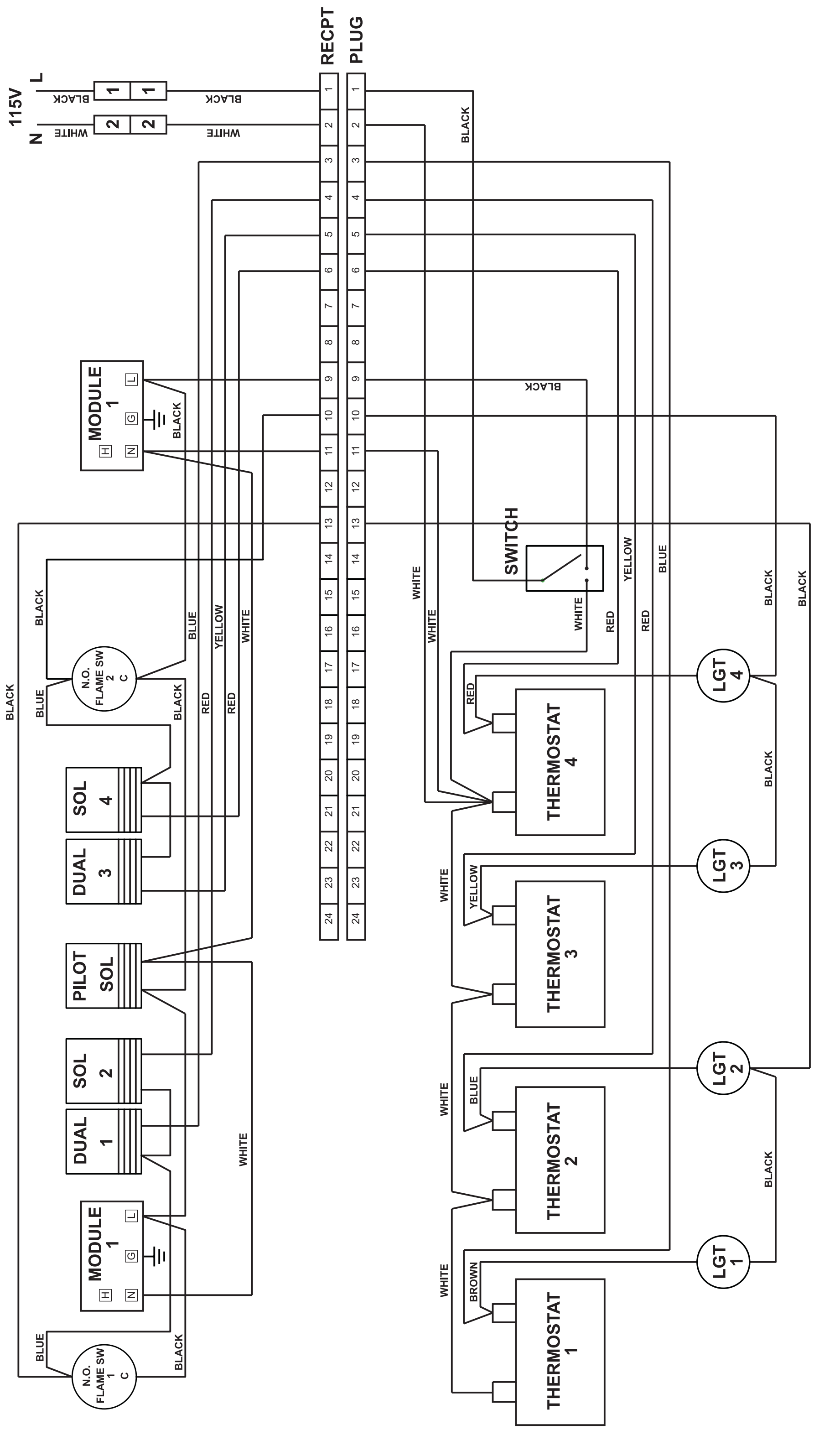


B NOTE:

1. USE SUPPLY WIRES SUITABLE FOR 200°C OR EQUIVALENT
   EMPLOYER DES FILS D'ALIMENTATION ADEQUATS 200°C OR EQUIVALENT
2. HARNESS PART NO. 723527-1

Schematic Drawing for 36" Griddle

SCHEMATIC DIAGRAMS

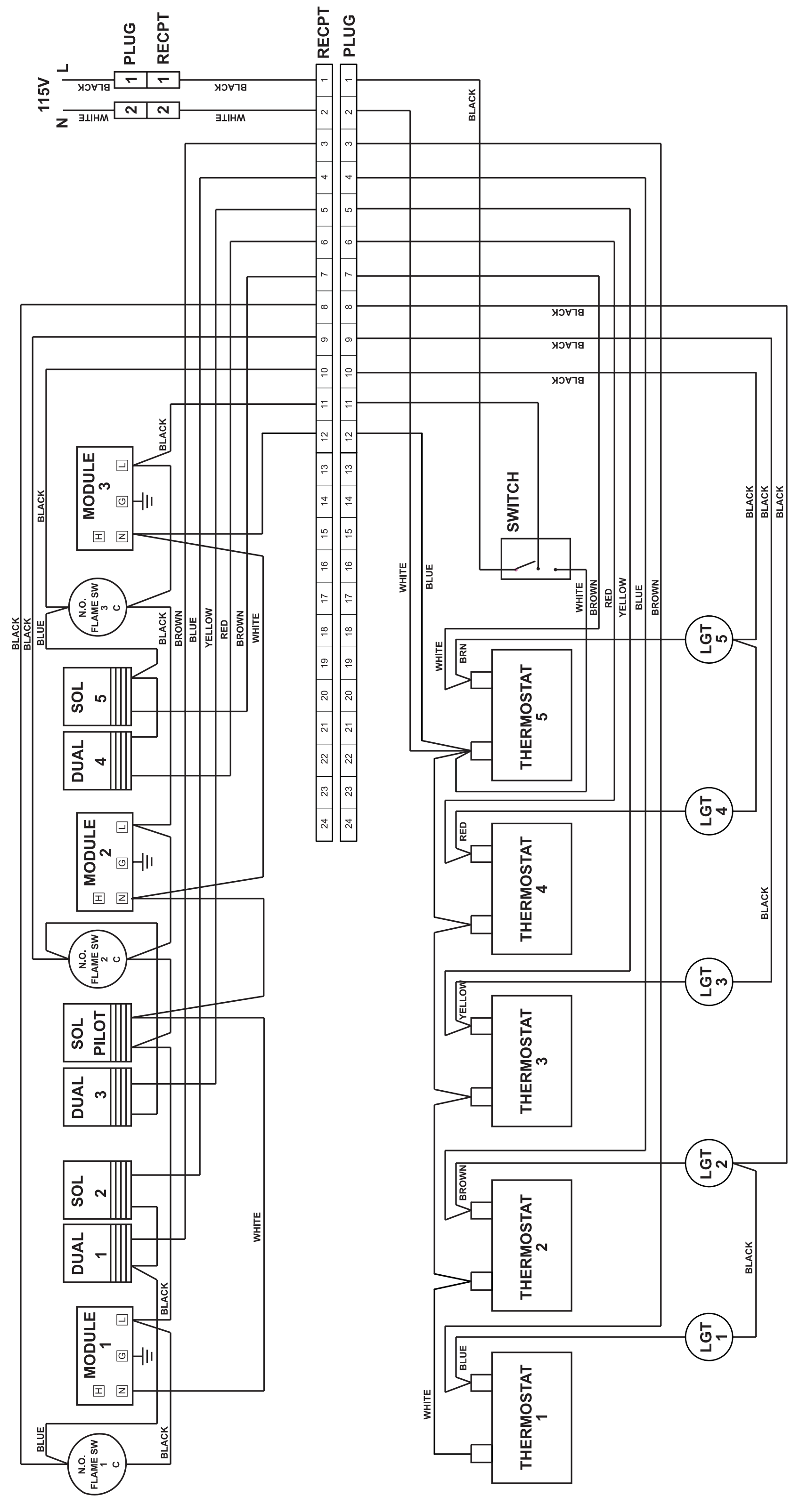


Ⓑ NOTE:

1. USE SUPPLY WIRES SUITABLE FOR 200°C OR EQUIVALENT
   EMPLOYER DES FILS D'ALIMENTATION ADEQUATS 200°C OR EQUIVALENT
2. HARNESS PART NO. 723528-1

Schematic Drawing for 48" Griddle

SCHEMATIC DIAGRAMS

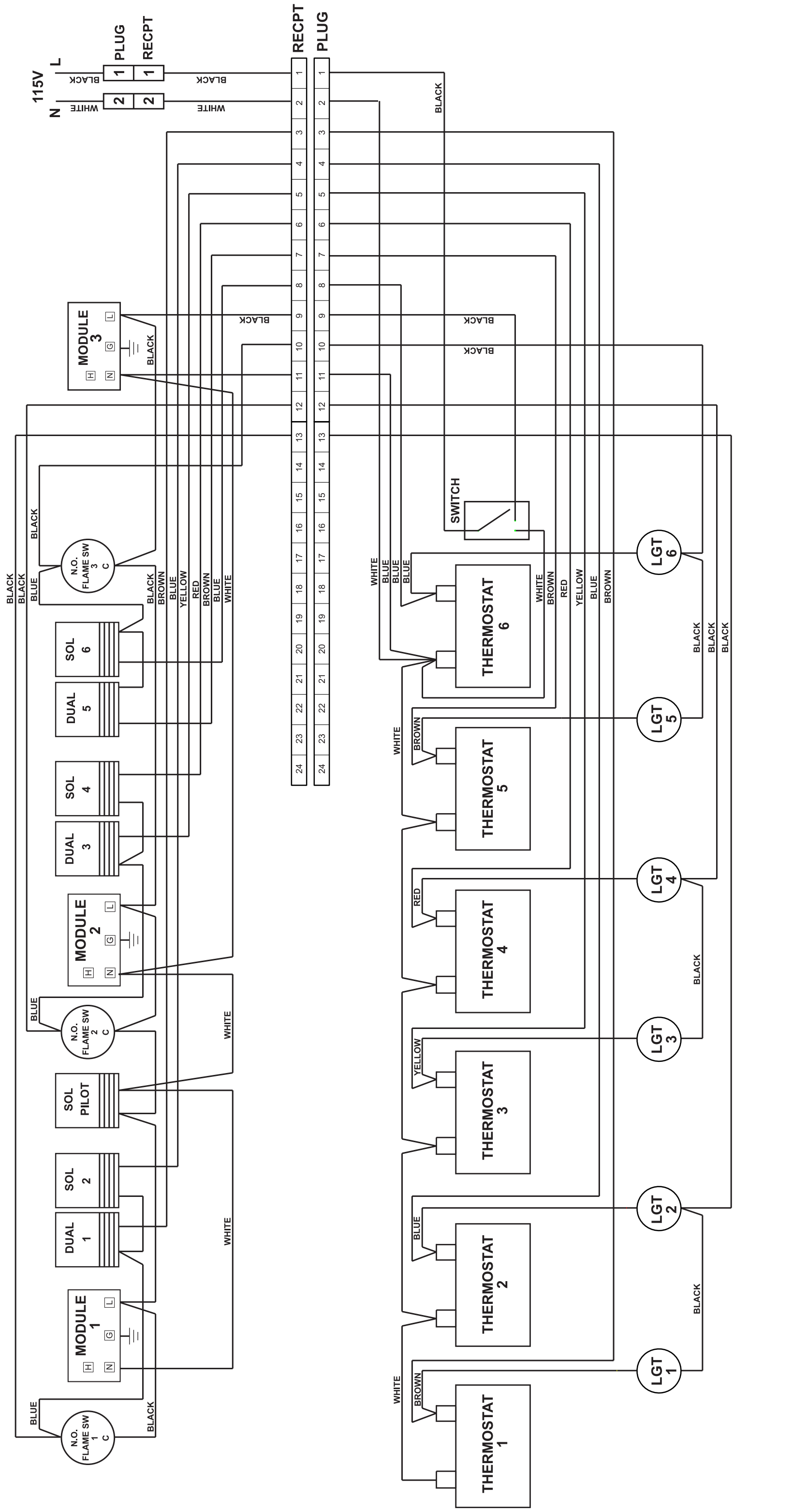


Ⓑ NOTE:

1. USE SUPPLY WIRES SUITABLE FOR 200°C OR EQUIVALENT
   EMPLOYER DES FILS D'ALIMENTATION ADEQUATS 200°C OR EQUIVALENT
2. HARNESS PART NO. 723529-1

Schematic Drawing for 60" Griddle

SCHEMATIC DIAGRAMS



B NOTE:

1. USE SUPPLY WIRES SUITABLE FOR 200°C OR EQUIVALENT
   EMPLOYER DES FILS D'ALIMENTATION ADEQUATS 200°C OR EQUIVALENT
2. HARNESS PART NO. 723530-1

Schematic Drawing for 72" Griddle

TROUBLESHOOTING GUIDE

SYMPTOM	CAUSE	REMEDY
Indicator light fails to light when power ON/OFF switch is set to ON position	Not plugged in	Plug griddle into correct voltage outlet
	Faulty ON/OFF switch	Replace ON/OFF switch
	Store circuit breaker tripped	Reset circuit breaker
	Faulty lamp	Replace lamp
Indicator light fails to go out when power ON/OFF switch is set to the OFF position	Faulty power ON/OFF switch	Replace switch
Griddle does not heat when thermostat is turned on	Not plugged in	Plug griddle into correct voltage outlet
	Faulty ON/OFF switch	Replace ON/OFF switch
	Store circuit breaker tripped	Reset circuit breaker
	Faulty thermostat	Replace thermostat
	Problem with pilot valve	Check operation of pilot valve
	Problem with igniter	Check operation of igniter
	Problem with flame switch	Check operation of flame switch
	Loose wire connection	Check for bad connection and correct
	Flame switch has not had enough time to heat up	Allow more time for flame switch to heat up
Igniter stays on too long after pilot flame is established	Flame switch bulb not hot enough	Check alignment of pilot and flame switch
		Check for obstruction or wrong size orifice
		Check for proper gas pressure
Igniter fails to light	Problem with igniter	Replace igniter
	Unit not plugged in	Plug griddle into correct voltage outlet
	Store circuit breaker tripped	Reset circuit breaker
	Problem with power ON/OFF switch	Replace ON/OFF switch
	Loose wire connection	Check and repair wire connection

TROUBLESHOOTING GUIDE

SYMPTOM	CAUSE	REMEDY
Pilot does not light after igniter has been on several minutes	Problem with pilot valve	Check operation of pilot valve
	Gas supply not purged of air	Purge gas lines
	No gas supply	Check that gas supply is on
	Loose wire connection	Check and repair wire connection
	Obstructed or wrong size pilot orifice	Check for obstruction or wrong size orifice
	Problem with alignment of pilot and igniter	Realign pilot and igniter
Pilot fails to remain lit after igniter goes out (Pilot may cycle on and off normally several times after cold start-up before the pilot heats up.)	Loose wire connection	Check and repair wire connection
	Air blowing pilot out	Correct air flow
	Obstructed or wrong size pilot orifice	Check for obstruction or wrong size orifice
	Problem with alignment of pilot and flame switch	Realign pilot and igniter
	Problem with flame switch	Check operation of flame switch
Burner does not come on (burner light does not come on)	Thermostat setting too low	Adjust thermostat to a high temperature setting
	Problem with thermostat sensor	Replace sensor
	Problem with temperature controller	Check or replace controller
	Problem with thermostat gas valve	Check thermostat gas valve
	Loose wire connection	Check and repair wire connection
Heat does not turn off, burner light is off, temperature is above thermostat setting	Problem with thermostat gas valve	Check or replace thermostat gas valve
Heat does not turn off, burner light is on, temperature is above thermostat setting	Problem with temperature controller	Check or replace temperature controller
Temperature varies	Low gas pressure	Check and adjust proper gas pressure
	Faulty thermostat sensor	Replace faulty thermostat and sensor